Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please cancel claim 56 without prejudice.

Please amend claims 1, 17, 33 and 52 as indicated below (material to be inserted is in **bold and underline**, material to be deleted is in ~~strikeout~~ or (if the deletion is of five or fewer consecutive characters or would be difficult to see) in double brackets [[ ]]):

Listing of Claims:

1. (Currently Amended) A transducer-based sensor system, comprising:

a transducer array including a plurality of transducers, where at least one transducer in the transducer array is configured to **have** ~~attach to~~ a sample material **attached thereto**;

an output processing subsystem coupled with the transducer array; and

a selector coupled with the transducer array and configured to selectively activate transducers within the transducer array by applying an enabling signal to the transducer array for at least one, but less than all, of the transducers, such that the transducer array includes at least one selected transducer and at least one unselected transducer, where:

for a selected transducer, application of the enabling signal enables a transmission path between the selected transducer and the output processing subsystem, thereby permitting output signals to be transmitted from the selected transducer to the output processing subsystem; and

the transducer array is configured to isolate any unselected transducers from the output processing subsystem, where such isolation is obtained by disabling the transmission paths, thereby substantially preventing output signals from being transmitted from the unselected transducers to the output processing subsystem.

2. (Original) The system of claim 1, where for each transducer, the transmission path between such transducer and the output processing subsystem is selectively enabled and disabled via operation of a buffer coupled within the transducer's transmission path, the buffer being operatively coupled with and controlled by the selector, so that the buffer permits transmission of output from such transducer to the output processing subsystem if such transducer is selected.

3. (Original) The system of claim 1, where for each transducer, a switch is coupled within the transmission path between the transducer and the output processing subsystem, and where the switch is controlled by the selector so as to close if the transducer is selected, thereby enabling the transmission path between the transducer and the output processing subsystem.

4. (Original) The system of claim 1, further comprising, for each transducer, a terminating impedance and a switching mechanism coupled with and controlled by the selector, such that:

if the transducer is selected, the switching mechanism operatively connects the transducer to the output processing subsystem; and

if the transducer is unselected, the switching mechanism operatively connects the transducer to the terminating impedance.

5. (Withdrawn) The system of claim 1, further comprising a global drive signal generator shared by the transducers, where the selector is configured to control operative coupling of the drive signal generator with the transducers, such that:

if one of the transducers is selected, the drive signal generator is operatively connected to that transducer so as to permit transmission of drive signals from the drive signal generator to that transducer; and

if one of the transducers is unselected, the drive signal generator is operatively disconnected from that transducer so as to prevent transmission of drive signals from the drive signal generator to that transducer.

6. (Withdrawn) The system of claim 5, where for each transducer, a switch is coupled between the global drive signal generator and the transducer, the switch being configured to close if the transducer is selected, and to open if the transducer is unselected.

7. (Withdrawn) The system of claim 6, where a plurality of cascaded switches are coupled between the global drive signal generator and each transducer.

8. (Original) The system of claim 1, further comprising a local drive signal generator for each transducer, where the selector is configured to control transducer activation for each transducer by permitting drive signals to be applied from the local drive signal generator to the transducer if the transducer is selected, and by preventing drive signals from being applied from the local drive signal generator to the transducer if the transducer is unselected.

9. (Cancelled)

10. (Previously Presented) The system of claim 8, where each local drive signal generator is coupled with and controlled by the selector such that the local drive signal generator is enabled if its associated transducer is selected.

11. (Withdrawn) The system of claim 1, where for each transducer, the transmission path is both an output transmission path which couples the transducer to the output processing subsystem, and an input transmission path which couples the transducer to a global drive signal generator configured to apply drive signals to the transducer array.

12. (Original) The system of claim 1, where the transducers are piezoelectric crystals.

13. (Original) The system of claim 1, where the transducers are surface acoustic wave devices.

14. (Original) The system of claim 1, where the transducers are bulk acoustic wave devices.

15. (Cancelled)

16. (Withdrawn) The system of claim 1, where the transducers are non-piezo resonator devices.

17. (Currently Amended) A transducer-based sensor system, comprising:

a transducer array including a plurality of transducers configured to be placed into operative proximity with a sample material, and configured to produce electrical output based upon drive signals applied to the transducers and upon the sample material, where at least one transducer in the transducer array is configured to **have** ~~attach to~~ a sample material **attached thereto**;

an output transmission path associated with each transducer, each output transmission path being defined between its associated transducer and an output processing subsystem configured to receive electrical output from the transducers; and

a selector configured to control activation and deactivation of portions of the transducer array by enabling and disabling the output transmission paths such that each output transmission path is either enabled, thereby allowing transmission of electrical output from the respective transducer to the output processing system, or disabled, thereby preventing transmission of electrical output from the respective transducer to the output processing system.

18. (Original) The system of claim 17, further comprising, for each transducer, a terminating impedance and a switching mechanism coupled with and controlled by the selector, such that:

if the output transmission path for transducer is enabled, the switching mechanism operatively connects the transducer to the output processing subsystem; and

if the output transmission path for transducer is disabled, the switching mechanism operatively connects the transducer to the terminating impedance.

19. (Withdrawn) The system of claim 17, further comprising a global drive signal generator shared by the transducers, where the selector is configured to control operative coupling of the drive signal generator with the transducers, such that:

if the output transmission path for one of the transducers is enabled, the drive signal generator is operatively connected to that transducer so as to permit transmission of drive signals from the drive signal generator to that transducer; and

if the output transmission path for one of the transducers is disabled, the drive signal generator is operatively disconnected from that transducer so as to prevent transmission of drive signals from the drive signal generator to that transducer.

20. (Withdrawn) The system of claim 19, where for each transducer, a switch is coupled between the global drive signal generator and the transducer, the switch being configured to close if the output transmission path for the transducer is enabled, and to open if the output transmission path for the transducer is disabled.

21. (Withdrawn) The system of claim 20, where a plurality of cascaded switches are coupled between the global drive signal generator and each transducer.

22. (Withdrawn) The system of claim 20, further comprising, for each transducer, a terminating impedance and a switching mechanism coupled with and controlled by the selector, such that:

if the output transmission path for transducer is enabled, the switching mechanism operatively connects the transducer to the output processing subsystem; and

if the output transmission path for transducer is disabled, the switching mechanism operatively connects the transducer to the terminating impedance.

23. (Original) The system of claim 17, further comprising a local drive signal generator for each transducer, where the selector is configured to control transducer activation for each transducer by permitting drive signals to be applied from the local drive signal generator to the transducer if the output transmission path for transducer is enabled, and by preventing drive signals from being applied from the local drive signal generator to the transducer if the output transmission path for the transducer is disabled.

24. (Original) The system of claim 23, where for each transducer, the output transmission path between such transducer and the output processing subsystem is selectively enabled and disabled via operation of a buffer coupled within the output transmission path, the buffer being operatively coupled with and controlled by the selector.

25. (Original) The system of claim 23, where each local drive signal generator is coupled with and controlled by the selector such that the local drive signal generator is enabled if the output transmission path of its associated transducer is enabled.

26. (Original) The system of claim 25, further comprising, for each transducer, a terminating impedance and a switching mechanism coupled with and controlled by the selector, such that:

if the output transmission path for the transducer is enabled, the switching mechanism operatively connects the transducer to the output processing subsystem; and

if the output transmission path for the transducer is disabled, the switching mechanism operatively connects the transducer to the terminating impedance.

27. (Original) The system of claim 25, where for each transducer, a switch is coupled between the transducer and the transducer's local drive signal generator, the switch being configured to close if the output transmission path for the transducer is enabled, and to open if the output transmission path for the transducer is disabled.

28. (Original) The system of claim 17, where the transducers are piezoelectric crystals.

29. (Cancelled)

30. (Original) The system of claim 17, where the transducers are bulk acoustic wave devices.

31. (Original) The system of claim 17, where the transducers are configured to provide both bulk wave and surface wave modes of operation.

32. (Withdrawn) The system of claim 17, where the transducers are non-piezo resonator devices.

33. (Currently Amended) A transducer-based sensor system, comprising:

a transducer array including a plurality of transducers and means for producing electrical output based upon drive signals applied to the transducers, where at least one transducer in the transducer array is configured to **have** ~~attach to~~ a sample material **attached thereto**;

output processing means for receiving and processing electrical output from the transducer array;

an output transmission path means associated with each of the plurality of transducers, each output transmission path means being defined between its associated transducer and the output processing means; and

selector means for selectively activating and deactivating portions of the transducer array by enabling and disabling the output transmission path means such that each output transmission path means is either enabled, thereby allowing transmission of electrical output from the respective transducer to the output processing means, or disabled, thereby preventing transmission of electrical output from the respective transducer to the output processing means.

34. (Previously Presented) A method of performing sensing operations on a sample using a transducer array having a plurality of transducers, the method comprising:

attaching the sample to at least one transducer in the transducer array;

operating the transducer array sequentially through a plurality of different states, where the method includes, for each state:

activating one or more of the transducers within the transducer array, which includes applying a drive signal to the transducer and receiving a

corresponding output signal for the transducer at an output processing subsystem; and

isolating all non-activated transducers within the transducer array to inhibit coupling of noise contributions from the non-activated transducers to the output processing subsystem,

where the transducers which are activated are varied from state to state as the transducer array is operated through the plurality of different states, thereby permitting output to be obtained for different portions of the transducer array at different times.

35. (Original) The method of claim 34, where activating one or more of the transducers within the transducer array includes enabling an output transmission path between the transducer and the output processing subsystem.

36. (Original) The method of claim 34, where the transducer array includes a local drive signal generator for each transducer of the transducer array, and where activating one or more of the transducers within the transducer array includes enabling the local drive signal generator associated with the transducer to be activated.

37. (Original) The method of claim 34, where the transducer array includes a local drive signal generator for each transducer of the transducer array, and where activating one or more of the transducers within the transducer array includes closing a switch between the transducer to be activated and the local drive signal generator associated with such transducer.

38. (Original) The method of claim 34, where the transducer array includes a local drive signal generator for each transducer of the transducer array, and where activating one or more of the transducers within the transducer array includes enabling the local drive signal generator associated with the transducer to be activated and closing an input switch coupled between the local drive signal generator and the transducer to be activated.

39. (Withdrawn) The method of claim 34, where activating one or more of the transducers within the transducer array includes closing the input switch for the transducer to be activated, the input switch being coupled between the transducer and a global drive signal generator configured to apply drive signals to the transducer array.

40. (Original) The method of claim 34, where isolating all non-activated transducers within the transducer array includes, for each such non-activated transducer, disabling an output transmission path between the transducer and the output processing subsystem.

41. (Original) The method of claim 40, where isolating all non-activated transducers within the transducer array includes, for each such non-activated transducer, operatively connecting the transducer to a terminating impedance.

42. (Original) The method of claim 40, where isolating all non-activated transducers within the transducer array includes, for each such non-activated transducer, preventing drive signals from being applied to the transducer.

43. (Original) The method of claim 40, where isolating all non-activated transducers within the transducer array includes, for each such non-activated transducer, operatively connecting the transducer to a terminating impedance and preventing drive signals from being applied to the transducer.

44. (Original) The method of claim 34, where isolating all non-activated transducers within the transducer array includes, for each such non-activated transducer, operatively connecting the transducer to a terminating impedance.

45. (Original) The method of claim 34, where isolating all non-activated transducers within the transducer array includes, for each such non-activated transducer, preventing drive signals from being applied to the transducer.

46. (Original) The method of claim 45, where preventing drive signals from being applied to a non-activated transducer includes opening a switch between the non-activated transducer and a drive signal source.

47. (Original) The method of claim 45, where preventing drive signals from being applied to a non-activated transducer includes disabling a local drive signal generator associated with and configured to apply drive signals to the non-activated transducer.

48. (Previously Presented) A method of employing an array of transducers to perform a sensing operation on a sample material, where the transducers are operatively coupled with an output processing subsystem configured to receive electrical output produced by the transducers, the method comprising:

attaching the sample material to at least one transducer in the transducer array;

generating a selection signal which is to be applied to the transducer array in order select a desired one of the transducers and thereby obtain output from the desired one of the transducers;

applying the selection signal to the transducer array;

selectively enabling, based on application of the selection signal, a transmission path operatively coupling the desired one of the transducers with the output processing subsystem; and

isolating the transducers within the transducer array, except for the desired one of the transducers, where such isolation is obtained by disabling transmission paths coupling such other transducers and the output processing subsystem, thereby substantially preventing output signals from being transmitted from such other transducers to the output processing subsystem.

49. (Previously Presented) The system of claim 1, where at least one transducer in the transducer array is configured to move the sample material.

50. (Previously Presented) The system of claim 49, where at least one transducer in the transducer array is configured to detect a mass of the sample material.

51. (Previously Presented) The system of claim 1, where at least one transducer in the transducer array is configured to break bonds within the sample material.

52. (Currently Amended) ~~The system of claim 1, where the transducer array is~~ **A transducer-based sensor system, comprising:**

a transducer array implemented within a microchip**, the transducer array including a plurality of transducers, where at least one transducer in the transducer array is configured to have a sample material attached thereto;**

an output processing subsystem coupled with the transducer array; and

a selector coupled with the transducer array and configured to selectively activate transducers within the transducer array by applying an enabling signal to the transducer array for at least one, but less than all, of the transducers, such that the transducer array includes at least one selected transducer and at least one unselected transducer, where:

for a selected transducer, application of the enabling signal enables a transmission path between the selected transducer and the output processing subsystem, thereby permitting output signals to be transmitted from the selected transducer to the output processing subsystem; and

the transducer array is configured to isolate any unselected transducers from the output processing subsystem, where such isolation is obtained by disabling the transmission paths, thereby substantially preventing output signals from being transmitted from the unselected transducers to the output processing subsystem.

53. (Previously Presented) A transducer-based sensor system, comprising:

a transducer array including a plurality of transducers;

an output processing subsystem coupled with the transducer array; and

a selector coupled with the transducer array and configured to selectively activate transducers within the transducer array by applying an enabling signal to the transducer array for at least one, but less than all, of the transducers, such that the transducer array includes at least one selected transducer and at least one unselected transducer, where:

for a selected transducer, application of the enabling signal enables a transmission path between the selected transducer and the output processing subsystem, thereby permitting output signals to be transmitted from the selected transducer to the output processing subsystem;

the transducer array is configured to isolate any unselected transducers from the output processing subsystem, where such isolation is obtained by disabling the transmission paths, thereby substantially preventing output signals from being transmitted from the unselected transducers to the output processing subsystem;

a local drive signal generator for each transducer, where the selector is configured to control transducer activation for each transducer by permitting drive signals to be applied from the local drive signal generator to each selected transducer, and by preventing drive signals from being applied from the local drive signal generator to each unselected transducer; and

a switch coupled between each transducer and each transducer's local drive signal generator, the switch being configured to close if the transducer is selected, and to open if the transducer is unselected.

54. (Previously Presented) A transducer-based sensor system, comprising:

a transducer array including a plurality of transducers, where at least one transducer in the transducer array is configured to provide both bulk wave and surface wave modes of operation;

an output processing subsystem coupled with the transducer array; and

a selector coupled with the transducer array and configured to selectively activate transducers within the transducer array by applying an enabling signal to the transducer array for at least one, but less than all, of the transducers, such that the transducer array includes at least one selected transducer and at least one unselected transducer, where:

for a selected transducer, application of the enabling signal enables a transmission path between the selected transducer and the output processing subsystem, thereby permitting output signals to be transmitted from the selected transducer to the output processing subsystem; and

the transducer array is configured to isolate any unselected transducers from the output processing subsystem, where such isolation is obtained by disabling the transmission paths, thereby substantially preventing output signals from being transmitted from the unselected transducers to the output processing subsystem.

55. (Previously Presented) A transducer-based sensor system, comprising:

a transducer array including a plurality of transducers configured to be placed into operative proximity with a sample material, and configured to produce electrical output based upon drive signals applied to the transducers and upon the sample material, where at least one transducer in the transducer array is a surface acoustic wave device;

an output transmission path associated with each transducer, each output transmission path being defined between its associated transducer and an output processing subsystem configured to receive electrical output from the transducers; and

a selector configured to control activation and deactivation of portions of the transducer array by enabling and disabling the output transmission paths such that each output transmission path is either enabled, thereby allowing transmission of electrical output from the respective transducer to the output processing system, or disabled, thereby preventing transmission of electrical output from the respective transducer to the output processing system.

56. (Cancelled)